

Claims

1. A Process for manufacturing a fibre-reinforced plastic component comprises:
 - providing a starting material;
 - preparing a starting mixture from the starting material, wherein the starting material is processed in a plasticising unit having a screw feed system under the application of heat to yield a low viscosity, homogenized, reactive starting mixture; and
 - injecting the reactive starting mixture into a cavity of a mold containing a fibre mass, wherein the reactive starting mixture along with the fibre mass is transformed by means of polymeric reaction into the fibre-reinforced plastic component.
2. A process according to claim 1, wherein the plasticising unit is part of an extruder device, and the homogenised, reactive starting mixture is conveyed from the plasticising unit by means of the screw system.
3. A process according to claim 2, wherein the starting mixture is conveyed via a supply line from the plasticising unit into a reservoir of a transfer unit and is injected by means of a pump unit via at least one injection feed pipe from the reservoir into the cavity of the mould.
4. A process according to claim 1, wherein the plasticising unit is part of an injection moulding device, and the homogenised, reactive mixture is conveyed by means of a screw system into a measured feed space situated in front of the screw system and conveyed by means of pistons from the measured feed space of the plasticising unit.

5. A process according to claim 4, wherein the starting mixture is injected from the measured feed space of the plasticising unit by at least one injection feed pipe into the cavity of the mould by means of a piston.
6. A process according to claim 4, wherein the starting mixture is conveyed via a supply line from the plasticising unit into a reservoir of a transfer unit and is injected by at least one injection feed pipe from the reservoir into the cavity of the mould.
7. A process according to one of the claims 1 to 6, wherein the starting mixture in the plasticising unit exhibits a fluid to pasty consistency and the viscosity of the starting mixture on leaving the plasticising unit until it enters the cavity of the mould is reduced further by input of energy until it reaches a fluid to highly fluid consistency.
8. A process according to claim 7, wherein the step in which the starting mixture is injected into the mould is regulated electronically by means of one of armatures and valves.
9. A process according to claim 8, wherein an injection feed pipes proximate to the related armatures or valves, comprises means to decouple the mould thermally from a transfer unit and from a plasticising unit.
10. A process according to claim 7, wherein the starting material is in the form of a dry solid material selected from the group consisting of powder, granulate, spherical, flake and mixtures thereof.
11. A process according to claim 7, wherein the starting material comprises pre-polymers mixed with an activator which accelerates the polymeric reaction.
12. A process according to claim 1, wherein the plastic matrix produced from the reactive starting material is one of a plastic in the form of a thermoplastic and duroplastic.

13. A process according to claim 1, wherein the plastic matrix produced from the reactive starting mixture is a poly(butylene terephthalate) (PBT), and contains cyclic oligomers of the PBT (CPBT) mixed with a zinc catalyst.
14. A process according to claim 1, wherein the starting mixture contains pre-polymers mixed with an activator for polymeric reaction with the pre-polymers, and the melting temperature of the starting mixture is lower than the melting temperature of the plastic component produced from the starting mixture and the ideal reaction temperature for the starting mixture is higher than the melting temperature of the starting mixture and lower than the melting temperature of the plastic matrix.
15. A device for carrying out the process according to claim 1, comprises means for preparing and mixing the starting material, the means comprise a plasticising unit with screw feed system for preparing and homogenising the low viscosity, reactive starting mixture, and means for supplying energy to the starting material are provided in the plasticising unit.
16. A device according to claim 15, wherein the plasticising unit is part of an extruder device.
17. A device according to claim 15, wherein the plasticising unit is part of an injection moulding unit.
18. A device according to one of the claims 15 to 17, wherein the device contains a transfer unit with a reservoir, and the plasticising unit is connected via one or more feed pipes to the reservoir of the transfer unit, and the reservoir is connected via one or more injection feed pipes to the cavity of a mould.

19. A device according to claim 18, wherein the mould is thermally decoupled from the plasticising unit and the transfer unit.
20. A device according to claim 18, wherein the transfer unit includes means for supplying energy for heating.
21. A device according to claim 18, wherein the transfer unit is arranged outside the mould.
22. A device according to claim 18, wherein the transfer unit is arranged inside the mould.